

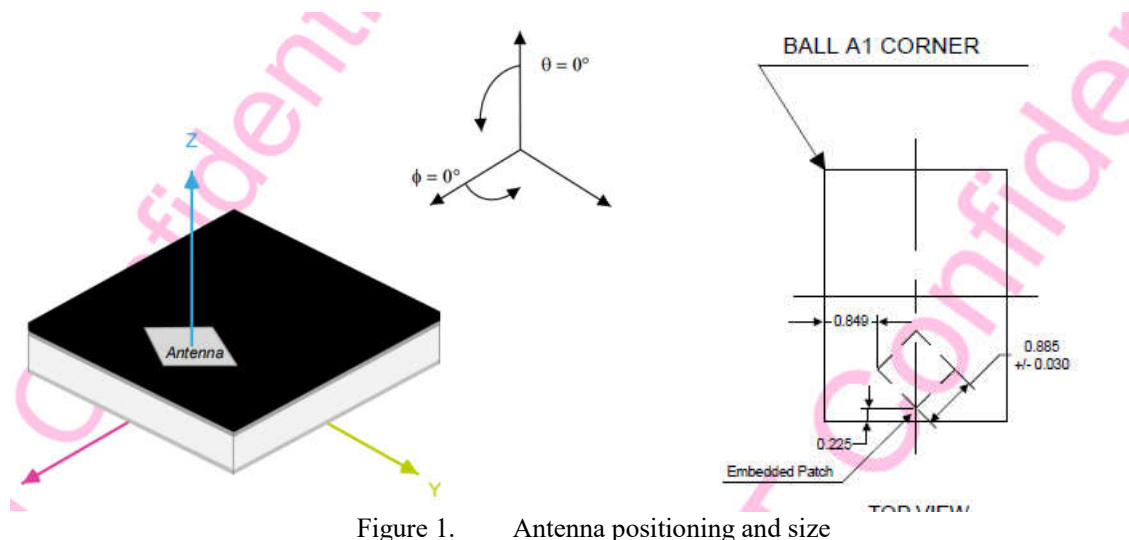
Integrated Antenna Characteristics

Built-in Integrated Antenna

The chip designed and manufactured by STMicroelectronics. The package embeds an aperture coupled patch single antenna, with dual polarization and 45° tilt, which allows the use of the same device for both sides of the link. It operates in Half-Duplex mode and features a weak back-radiation on the PCB.

Nevertheless, particular care must be taken for the PCB implementation. This is especially the case for the chip grounding on the board, as the antenna radiated performance can vary for different PCB implementations.

The antenna is embedded in the chip package which is a VFBGA (very thin profile fine pitch ball grid array) AiP (antenna-in-package) 2.9 mm x 4.1 mm x 0.8 mm, 23 balls, 0.4 mm pitch. The antenna position and size are shown in figure 1. The antenna size is 0.885*0.885mm.



The antenna's directivity is along the Z axis, with an aperture opening that accommodates ± 2 mm alignment, considering an operating range of 30 mm. Both 0° and 180° relative orientations are supported as shown in Figure 2.



Figure 2. Board outlook

The integrated antenna broadside radiation pattern is described in Figure 3.

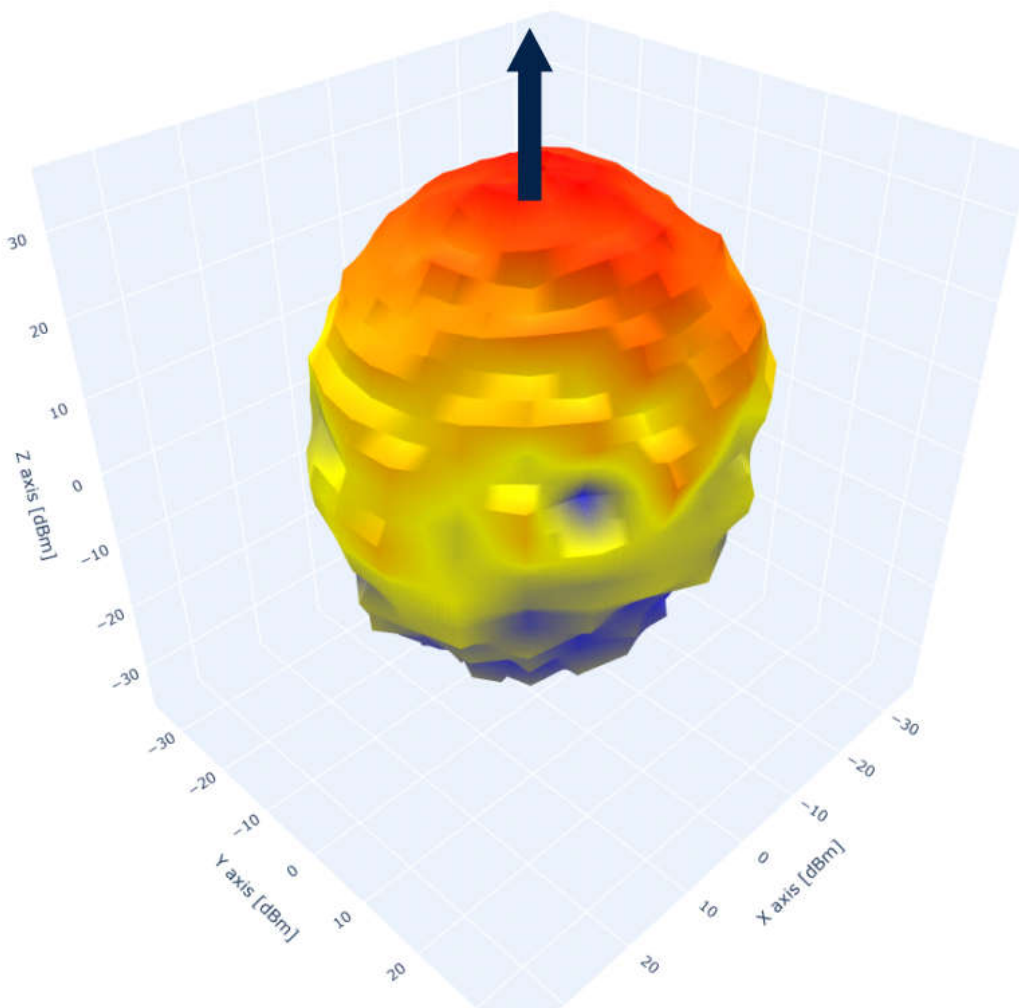


Figure 3. EIRP - measured 3D radiation pattern

Table 1. Antenna-in-package key specification (1)

Parameter	Value
Center frequency	60.5 GHz
Polarization	Dual polarization, linear
Antenna number	Single antenna
Tx gain (2)	4 dBi peak
Rx gain (2)	4 dBi peak
3 dB aperture	E-Plane: +/- 55° H-Plane: +/- 45°
PCB immunity	10 dB minimum front to back ratio
XY offset	+/- 2 mm

1. They can vary with PCB implementation.

2. Far-field gain established when the distance between antennas is at least 15 mm.

Name and Address of antenna manufacturer: STMicroelectronics - 12, rue Jules Horowitz – BP217 38019 Grenoble Cedex | France

Model number of the antenna: LP AIP antenna (LP for linear polarized, AIP for Antenna in package)

Antenna type: aperture coupled patch single antenna

Antenna Manufacturer Name: STMicroelectronics

Antenna Manufacturer Address: 12, rue Jules Horowitz – BP217 38019 Grenoble Cedex | France